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Journal of the Society of Arts.

FRIDAY, AUGUST 23, 1861.

INTERNATIONAL EXHIBITION OF 1862.

The Council beg to announce that the Guarantee Deed is now lying at the Society's House for signature, and they will be much obliged if those gentlemen who have given in their names as Guarantors, will make it convenient to call there and attach their signatures to the Document. Signatures for sums amounting in the aggregate to £426,500, have been attached to the Deed.

The following arrangements, in addition to those already published, have been made in foreign countries and the Colonies:—

KINGDOM OF THE NETHERLANDS.

The following are the Commissioners.—Mr. J. W. L. Van Vordt, of Rotterdam, *President*; Dr. E. H. Van Baumhauer, of Amsterdam; Mr. J. A. Van Eyk, of Amsterdam; Mr. J. Groll, of Haarlem; Mr. M. L. Hermans, of the Hague; the Hon. H. G. C. L. Janssens, of the Hague; Mr. W. Poolman, of Gouda; Mr. C. Rochussen, of Amsterdam; Mr. L. Royer, of Amsterdam; Dr. S. Sarphati, of Amsterdam; and Mr. W. C. A. Staring, of the Hague.

TUNIS.

The Bey of Tunis is about to appoint a Commission.

HAMBURG.

On the proposal of the Senate of Hamburg the *Bürger-schaft* has voted the sum of 20,000 marks currency for the necessary expenses to be incurred in the representation of the produce and manufactures of the City at the Exhibition, and a committee has been appointed, the chairman of which is Mr. Senator Alfred Rücker, late Hanseatic Minister in London.

GREECE.

The following are the Commissioners:—

Messrs. N. Théocharis, *Chairman*, Constantine Dosios, G. Nautis, M.P., X. Lauderer, Th. Ophanides, P. Gion-nopoulos, S. Spilistakis, D. Aeniau, N. Balsamaki, S. Krenos, Lucas Rhalli, S. Melas C. Douronti, and John Ghinakos.

FRANKFORT.

A Commission has been appointed of which Senator Berners is the *President*, and constituted authority for communication with Her Majesty's Commissioners.

SOUTH AUSTRALIA.

The following gentlemen form the several Committees in the colony for the purpose of collecting and forwarding articles of Industry and Art to the Exhibition:—

Central Committee.—The very Rev. Dean Pownall, *Chairman*: the Lord Bishop of Perth; Messrs. the Hon. F. B. Barlee, Archibald Paull Burt, the Hon. Alfred Hillman, Henry Wakeford, George Clifton, Lionel Samson, William Locke Brockman, Robert King, George Shenton, J. G. C. Carr, Francis Lochée, E. Newman, L. S. Leake, S. A. Barker, and E. W. Landor, *Secretary*.

Albany Committee.—Sir Alexander Campbell, Bart., Messrs. S. Knight, and John McKail.

Toodyay, Northam, and Victoria Plains Committee.—Messrs. Alfred Durlacher, James Drummond, Sen., James

Drummond, Jun., James M. Dempster, A. W. Morgan, Donald McPherson, and Bishop Salvado.

York and Beverley Committee.—Messrs. Lewis Bayly, W. Cowan, S. E. Burges, and S. S. Parker.

Bunbury and Australind Committee.—Messrs. George Eliot, W. Pearce Clifton, and Thomas Little, Sen.

Vasse Committee.—Messrs. Joseph Harris, Col. Molloy, J. G. Russell, and W. R. Bunbury.

Champion Bay Committee.—Messrs. Charles Symmonds, J. S. Davis, Thomas Burges, and William Gale.

NOTICE TO INSTITUTIONS.

The following are the arrangements for the Excursion to the Crystal Palace, Tuesday next, August 27:—

The doors of the Palace will be opened at ten a.m.

At 12.30 p.m.—The full orchestral band of the Crystal Palace Company, in the Concert-room adjoining the Centre Transept.

2 p.m.—Great Handel Festival organ performance.

3 p.m.—Mr. B. Waterhouse Hawkins has kindly undertaken to deliver a lecture on the "Gorilla and other Monkeys contrasted with Man," in the Lecture Theatre of the School of Science, Art, and Literature.

4 p.m.—Display of the Great Fountains and entire series of Waterworks.

5 p.m.—The Full Orchestral Band of the Company.

Grand Poultry Show throughout the day.

The following departments devoted to Industrial Science and Art will be found particularly interesting to Members of Mechanics' Institutions:—

The Industrial Museum, situated in the gallery of the central transept, containing the agricultural and technological collections. These comprise specimens of all the farm products cultivated in Britain, and of raw products used in the arts and manufactures, with illustrations of the processes involved in their preparation; building stones, coals, and other minerals from British mines, foreign woods, &c.

The Tasmanian Court.

The collections illustrating "The Customs and Products of Modern Egypt."

The products of Greece, recently presented by the Greek Government.

The illustrated collection of British bird's eggs.

A collection of flint implements found in the drift, and specimens of stone weapons now in use among various tribes.

N.B. These five interesting collections are at the further end of the Tropical Department.

The Indian and Chinese collections, and the Naval Museum and Engineering Models, in the Gallery at the tropical end of the Palace.

The Picture Gallery containing amongst other works a collection of copies of the Queen's private pictures.

At the basement of the building the whole of the various processes connected with the Cotton Manufactures will be in full operation during the day.

Arrangements are provided in the grounds for cricket, archery, quoits, gymnastics, boating, &c.

PROGRAMME OF EXAMINATIONS FOR 1862.*

PRELIMINARY NOTICE.

I. Any person, male or female, not under sixteen years of age, may undergo the Examinations described in the following Programme. They were established to encourage, test, attest, and reward efforts made for self-improvement by adult members and students of the Mechanics' Institutions, Athenæums, People's Colleges, Village Classes, and other Educational Bodies of the like character, in Union with the Society of Arts. Such members and students are commonly mechanics, artisans, labourers, clerks, tradesmen and farmers not in a large way of business, apprentices, sons and daughters of tradesmen and farmers, assistants in shops, and others, of various occupations, who are not Graduates, Undergraduates, or Students of a University, nor following or intending to follow a learned profession, nor enjoying nor having enjoyed a liberal education. To all such members and students, and also to persons of the like condition in places where there are no Institutions able to enter into the Union, the Examinations, Certificates, and Prizes (see page 680) are offered by the Society of Arts. See paragraph 1 (*A. B. C.*), next page.

II. Teachers and Pupil Teachers may be examined and receive Certificates, but cannot compete for Prizes.

III. Persons of a different grade in society, though their admission to the Examinations with the view of obtaining Certificates is provided for, cannot compete for Prizes. See paragraph 1 (*D.*).

LIST OF SUBJECTS AND EXAMINERS FOR 1862.

* * Candidates, before choosing their subjects, should refer to the Time-table, at page 676.

1. Arithmetic	{ Rev. Alexander Wilson, M.A., National Society, London.	14. Animal Physiology (in relation to Health)	{ John Marshall, Esq., F.R.S., F.R.C.S., Surgeon to the University College Hospital, and Lecturer on Anatomy in the Government Department of Science and Art.
2. Book-keeping	{ John Ball, Esq., of the firm of Messrs. Quilter and Ball.	15. Botany	{ Dr. Lindley, F.R.S., Profes- sor of Botany in the Univer- sity of London, and Hon. Sec. of the Horticultural So- ciety.
3. Algebra	{ J. J. Sylvester, Esq., M.A., F.R.S., Professor of Mathe- matics at the Royal Military Academy, Woolwich.	16. Agriculture	{ J. C. Morton, Esq.
4. Geometry	{ Rev. B. Morgan Cowie, M.A., Professor of Geometry at Gresham College; one of H.M. Inspectors of Schools.	17. Mining and Metal- lurgy	{ J. Arthur Phillips, Esq., Civil Engineer, Graduate of the Imperial School of Mines of France, &c.
5. Mensuration	{ John Sykes, Esq., M.A., Fel- low of Pembroke College, Cambridge, Assistant Secre- tary to the Committee of Privy Council on Education.	18. Political and Social Economy	{ Charles Neate, Esq., M.A., Professor of Political Eco- nomy in the University of Oxford.
6. Trigonometry	{ Rev. T. G. Hall, Professor of Mathematics in King's Col- lege, London.	19. Domestic Economy	{ The Very Rev. Richard Dawes, F.R.S., Dean of Hereford.
7. Conic Sections	{ Rev. Bartholomew Price, M.A., F.R.S., Sedleian Pro- fessor of Natural Philosophy in the University of Oxford.	20. Geography	{ Wm. Hughes, Esq., F.R.G.S., Professor of Geography in Queen's College, London.
8. Navigation and Nauti- cal Astronomy	{ John Riddle, Esq., F.R.A.S., Head Master of the Nautical Schools, Greenwich.	21. English History	{ C. H. Pearson, Esq., M.A., Professor of Modern History, King's College, London.
9. Principles of Mecha- nics	{ Rev. Jonathan Bates, M.A., Fellow of Gonville and Caius College, Cambridge, Vice- Principal of the Diocesan Training College, Chester.	22. English Literature	{ Rev. Samuel Clark, M.A., F.R.G.S., Principal of the Training College, Battersea, <i>Chairman of the Board.</i>
10. Practical Mechanics	{ T. M. Goodeve, Esq., Profes- sor of Mechanics at the Royal Military Academy, Woolwich.	23. Logic and Mental Science	{ Rev. Wm. Thomson, D.D., Provost of Queen's College, Oxford.
11. Magnetism, Electri- city, and Heat	{ Charles Brooke, Esq., M.A., F.R.S., Surgeon to the West- minster Hospital.	24. Latin and Roman History	{ Rev. F. Temple, D.D., Head Master of Rugby School.
12. Astronomy	{ James Glaisher, Esq., F.R.S., Royal Observatory, Green- wich.	25. French	{ Alphonse Mariette, Esq., M.A., Professor of French, King's College, London.
13. Chemistry	{ A. W. Williamson, Esq., Pro- fessor of Chemistry, Univer- sity College, London.	26. German	{ Dr. Bernays, Professor of German, King's College, London.
		27. Freehand Drawing	{ F. S. Cary, Esq.
		28. Mechanical Drawing	{ Thomas Bradley, Esq., Pro- fessor of Geometrical Drawing in King's College, London.
		29. Theory of Music	{ John Hullah, Esq.

* The papers set at the last Examination are now published in the form of a pamphlet, which may be had of Messrs. Bell and Daldy, 186, Fleet-street, price 6d.

TERMS OF ADMISSION TO THE EXAMINATIONS.

1. Every Candidate for Examination must be admitted through a Local Educational Board connected with the Society of Arts, and be at least sixteen years of age.

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|---|----------|
| (A.) Members of, or students of classes in, Institutions in direct Union with the Society of Arts, are admitted | Free. |
| (B.) Members of, or students of classes in, "Small Institutions"* not in direct Union with the Society of Arts, but connected with a Provincial Union that is "in Union" with the Society, are admitted on payment of a fee of..... | 2s. 6d. |
| (C.) In districts where there are no Institutions at all, or only "small Institutions,"* Local Educational Boards, paying one guinea a year to the Society of Arts, may admit candidates on payment of a fee of..... | 2s. 6d. |
| (D.) Persons of a higher class of society than those described in paragraph 1 (Preliminary Notice), are admitted to the Examinations on payment of a fee of | 10s. 6d. |

N.B.—The Council in every case leave it to the Local Board to decide whether a candidate should pay this fee.

2. Candidates coming under the head (D), as well as Teachers and Pupil Teachers, though they may be examined and receive certificates, cannot compete for the prizes of which details are given at page 680.

3. In any locality, whether there be an Institution in union with the Society of Arts or not, the first thing to be done to enable any person to take advantage of the Society's Examinations, is to form a Local Educational Board.

LOCAL EDUCATIONAL BOARDS.†

4. The Managers of Institutions in Union with the Society of Arts, and other persons desirous to co-operate with the Society in promoting the instruction of adults, are invited to form Local Boards. Each Local Board must consist of at least three members; and, with advantage, may be much more numerous. There must be a Chairman and a Secretary. The district for which the Board is to act should be defined; and every Educational Institution‡ within those limits ought to be represented in the Board. It is of great importance that each Local Board should include the representatives of more Institutions than one, and that there should not be more than one Local Board in each locality. The composition of the Board must be such as to command the respect and confidence of the neighbourhood. Where gentlemen of high literary and scientific attainments are willing to serve on the Board, their services are of great value; but the necessary work may be done by any well-educated persons of high character and good sense. No member of a Local Board can be a candidate for examination.

5. A detailed list of the chairman, secretary, and other members of each Local Board, giving not only their names but their addresses and designations, should be submitted to the Council of the Society of Arts before the 1st of January, 1862. In some cases the Local Educational Boards comprise such large districts that, for the convenience of the Candidates, Branch Local Boards have to be formed within the Districts. Wherever this is the case, the names and addresses of the members, both of the District Board and of its Branch Boards, must be forwarded to the Secre-

* Small Institutions are defined as those which have an income of less than £75 a year.

† For a List of the Boards already formed, with the names of the Secretaries, see page 681.

‡ These Educational Boards, besides superintending the Examinations of the Society of Arts, may advantageously assist in promoting various other plans for the furtherance of Education in their districts; it is, therefore, desirable that they should include representatives not only from the various Institutions for the promotion of adult instruction, but also from the principal schools in the locality. See page 682 respecting the Central Committee for Elementary Examinations.

tary of the Society of Arts. All changes in the composition of the various Boards now in existence, or to be formed hereafter, should be immediately notified to the Society of Arts.

6. Local Educational Boards in connection with the Society of Arts need make no payment to the Society, unless they desire to exercise the power of admitting candidates (see par. 1 C.) where there are no Institutions in union with the Society of Arts; in which case a subscription of one guinea a year must be paid.

7. The Society's system of Examinations consists of (1) Previous Examinations by the Local Boards, and (2) Final Examinations by the Examiners of the Society of Arts, under the supervision of the Local Boards.

8. * * A Central Committee of Educational Unions and Adult Education Societies, in connexion with the Society of Arts, has been formed to promote uniformity of action and a fixed Standard in the Elementary and Previous Examinations which are held by the Provincial Unions, Adult Education Societies, and Local Boards connected with the Society of Arts. See page 682.

PREVIOUS EXAMINATIONS BY THE LOCAL BOARDS.

9. These Examinations are (1) to test the handwriting and spelling of the Candidates, their knowledge of English Grammar, composition, and the common rules of arithmetic, and (2) to ascertain whether their knowledge of those special subjects in which they seek to be examined by the Society's Examiners is such as to offer a fair prospect of their obtaining certificates. The Previous Examinations may be either wholly written, or partly oral and partly written, at the discretion of each Local Board.

10. HANDWRITING.—A bold, even, round hand, without loops, long tails, or flourishes, should be preferred.

11. SPELLING, ENGLISH GRAMMAR, AND COMPOSITION.—An extract from some standard English author should be set, into which a few errors of spelling, grammar, and punctuation should be introduced. Some faulty grammatical constructions in common use, and vulgarisms, should be submitted for correction.

12. ARITHMETIC.—A knowledge of the elementary rules, including the Rule of Three, should be required.

13. No candidate can be admitted to the Final Examination without a certificate (Form No. 4 in Appendix) from his Local Board, that he has satisfactorily "passed" its previous Examination in the elementary subjects specified in paragraphs 10, 11, and 12, and in the special subjects in which he wishes to be examined by the Society's Examiners. If, in any case, a Local Board should be unable itself to examine a Candidate in a special subject, it will be sufficient if that Board notify the fact in the Form No. 4, and add therein that the Board believes the Candidate to be fit to be examined in that subject by the Central Board. N.B.—This relaxation does not apply to music. [See page 682, respecting Central Committee.]

14. The Previous Examinations must be held by the Local Boards sufficiently early in the year 1862 to allow the results to be communicated to the Council, on a Form which will be furnished on application (Form No. 2 in Appendix), on or before the 23d April, i.e., four weeks before the commencement of the Final Examinations.

15. Unreserved communications between the Society and the Local Boards will be requisite to secure to the "passes" of the various Local Boards throughout the Union such an uniformity of value as may be attainable. [See also page 682, Central Committee.]

FINAL EXAMINATION BY THE SOCIETY'S EXAMINERS.

16. The Forms (Form No. 4, in Appendix), containing the names of the "passed" candidates, and the subjects in which they desire to be examined, having been returned to the Secretary of the Society of Arts, not later than the 23rd April, 1862, the printed papers of questions in the various subjects will be prepared by the Society's

Examiners, and will be forwarded to the Secretaries of the Local Boards.

17. The whole of the papers appointed for each of the evenings of the Examination, according to the subjoined Time-table, will be contained in a separate sealed envelope, which is not to be opened till the Candidates are present, at half-past six on that evening.

18. The details of the mode in which the Final Examinations are to be conducted, are given in the "Letter of Instructions," (Form No. 6, in Appendix) and every member of each Local Board should make himself thoroughly acquainted with them.

19. The Final Examinations must be held *simultaneously on the days, and at the hours specified in the following Time table*, at those places where Local Boards are established.

20. In choosing the subjects in which they desire to be examined, candidates must take notice of the arrangements of this Time-table, as they *cannot* be examined in two subjects which are set down for the same evening.

TIME TABLE FOR 1862.

No Candidate may work more than one paper on each evening, and each paper must be worked on the particular evening appointed for it.

Tuesday, the 20th May, From 6 30 to 9 30 p.m.	Wednesday, the 21st May, From 6 30 to 9 30 p.m.	Thursday, the 22nd May, From 6 30 to 9 30 p.m.	Friday, the 23rd May, From 6 30 to 9 30 p.m.
Arithmetic. Trigonometry. Magnetism, Electricity, and Heat. Agriculture. Mining and Metallurgy. Mechanical Drawing. German.	Book-keeping. Navigation and Nautical Astronomy. Conic Sections. Chemistry. Music. Domestic Economy. English History.	Algebra. Practical Mechanics. Astronomy. Physiology. Political and Social Economy. French. *English Literature.	Geometry. Mensuration. Principles of Mechanics. Botany. Geography. Latin. Logic and Mental Science. Freehand Drawing.

* Two Papers of one hour and a half each in this subject are considered as one.

21. The Local Boards must see, and certify to the Council, in the form which the Council will furnish (Appendix, Form No. 8), that the papers are fairly worked by each candidate, without copying from any other, and without books or other assistance; and must seal up and return the worked papers to the Council *immediately* on the close of each evening's Examination. The papers will then be submitted to the judgment of the Examiners, and certificates of three grades will be awarded.

22. The names of the candidates who obtain Prizes and Certificates will be published in the *Journal of the Society of Arts*, as soon as the Examiners have pronounced their judgment, and the Prizes and Certificates will subsequently be forwarded to the Local Boards for distribution.

23. A candidate who has obtained from the Society a certificate of the 1st class in any subject, cannot again be examined in the same subject.

24. A candidate who has obtained a certificate of the 2nd or 3rd class may, on the recommendation of the Local Board, be examined in the same subject, in a subsequent year, without again passing the Previous Examination, but the name must always be returned in the proper form (No. 4 in the Appendix).

25. A candidate who, having obtained a certificate in any subject, desires to be examined in some other subject, in a subsequent year, may be "passed" by the Local Board, after examination in that subject, without re-examination in the elementary subjects specified in paragraphs 10, 11, 12.

SUBJECTS OF EXAMINATION FOR 1862.

26. In the following paragraphs will be found a brief outline of the portions of the respective subjects in which the candidates will be examined, and their attention is especially drawn to this part of the programme. Though in most instances the Examiner has set down certain Text-books, in so doing he pronounces no opinion as to their merit. Real knowledge, however or wherever acquired, will be accepted by the Examiners.

I.—ARITHMETIC.

27. Practice—Simple and Compound Proportion—Interest—Discount—Insurance—Vulgar and Decimal Fractions; with the principles of a Decimal Notation in money on the basis of the pound unit.

28. The questions framed from the preceding syllabus will consist mainly of practical problems, and the Examiner will take into account not only the correctness of the answers, but also the excellence of the methods by which they are worked out, and the clearness and neatness of working, which must always be shown.

29. Text Books:—Any of the modern treatises on Arithmetic, such as Hunter's Text Book (*National Society*), Colenso (*Longmans*), or Barnard Smith (*Macmillan*).

II.—BOOK-KEEPING BY DOUBLE ENTRY.

30. Candidates should be prepared to answer questions as to the nature and use of the different books usually kept in a merchant's office. They should be prepared to journalise a series of transactions from a waste book, and, having posted the entries to the ledger, to balance the accounts, to prove the correctness of the postings by a trial-balance, and finally to exhibit an account of profit and loss, and a balance sheet.

31. Candidates should be prepared to draw the usual commercial forms, such as receipts, bills of exchange, promissory notes, invoices, account sales, accounts current, bills of parcels, and to explain the meanings of technical terms used in general business.

32. Text Books:—Book-keeping—Irish School Series. (*Groombridge*.)

Rudimentary Book-keeping. (*Weale's Series*.)

Kelly's Elements of Book-keeping. (*Simpkins and Co.*)

III.—ALGEBRA.

33. Elementary Operations and Fractions. Simple and Quadratic Equations and Problems leading to them. Involution and Evolution. Surds. Arithmetical and Geometrical Series. Binomial Theorem.

34. Text Books:—Todhunter's Algebra (*Macmillan*); Colenso's Algebra (*Longmans*), or any other modern treatise on Algebra.

IV.—GEOMETRY.

35. A facility in solving geometrical theorems and problems, deducible from the first six books of Euclid, will be expected on the part of those who desire to obtain certificates of the first or second class.

36. Text Book:—Euclid, Books I., II., III., IV., VI., XI., as far as Prop. 21. Potts' smaller edition (*Parker*).

V.—MENSURATION.

37. The calculation of the areas and circumferences of plane figures bounded by arcs of circles or right lines, and solid contents of cones, cylinders, spheres, &c. Candidates will be expected to be familiar with the different rules for measuring and estimating artificers' work, such as joiners', bricklayers', masons', and plumbers' work, and

to be able to prepare estimates of such work from given quantities.

38. Text Books:—Lund's Mensuration, Part III., of his Elements of Geometry and Mensuration. Tate's Mensuration. Young's Treatise on Mensuration (*Simms and M'Intyre*).

VI.—TRIGONOMETRY.

39. In Plane Trigonometry, the formulæ for the trigonometrical functions of the sum of two angles, the numerical solution of plane triangles, and the use of logarithmic tables, &c.

40. Spherical Trigonometry, Napier's Rules, Solution of Spherical Triangles.

41. Text Books:—Snowball's Trigonometry (*Macmillan*), Hall's Trigonometry for Schools (*Christian Knowledge Society*), or any of the modern treatises on Algebraical Trigonometry. Mathematical Tables (*Chambers' Series*).

VII.—CONIC SECTIONS.

42. The properties of the three curves treated geometrically; also as deduced from the cone. The principles of projection, orthogonal and central, applied to derive the properties of the Conic Sections from those of the circle.

43. Analytical Conics, including the equations of the straight line, the circle, the three conic sections, and the general equation of the second degree.

44. Text Books:—Puckle's Conic Sections (*Macmillan*). Todhunter's Conic Sections (*Macmillan*). Salmon's Conic Sections (*Longmans*). Drew's Conic Sections (*Macmillan*). Whewell's Conic Sections (*Parker*).

VIII.—NAVIGATION AND NAUTICAL ASTRONOMY.

45. A good knowledge of Plane and Spherical Trigonometry, of the definitions and terms used in Nautical Astronomy, and of the various measurements of time and their mutual conversions will be required, as well as skill in the use of logarithmic tables, and neatness, order, and accuracy in the numerical solutions of problems. The candidate should understand the construction of charts; the nature and laws of circular storms; great circle sailing, &c.; the methods of determining the latitude, longitude, variation of the compass, and error and rate of a chronometer by astronomical observations, with the demonstrations of the formulæ employed; the use of Nautical Astronomical Instruments, &c.

46. Text Books:—The Nautical Almanac. (*Murray*). Riddle's Navigation and Nautical Astronomy. (*Law, Essex-street*.)

IX.—PRINCIPLES OF MECHANICS.

47. The properties of matter, solid, fluid, and gaseous.

48. Statics: The composition, resolution, and equilibrium of pressures acting on a material particle; constrained particles; machines; attractions.

49. Dynamics: Gravitation; collision; constrained motions; projectiles; oscillations.

50. Rigid Dynamics: Motion of a rigid body about a point;—of a free rigid body;—of a system of rigid bodies.

51. Hydrostatics: Pressures of fluids; equilibrium of floating bodies; specific gravity; elastic fluids; machines; temperature and heat; steam; evaporation.

52. Hydrodynamics: Motion and resistance of fluids in tubes, &c.; waves and tides.

53. Pneumatics: Mechanical properties of the air; the barometer.

54. Text Books:—Todhunter's Statics, or Parkinson's Mechanics. Goodwin's Mathematics. Miller's, Phear's, or Webster's Hydrostatics. Webster's Theory of Fluids. The treatise on this subject in Orr's Circle of the Sciences. Golding Bird's Elements of Natural Philosophy, by C. Brooke. (*Churchill*.) Lardner's Handbooks on Natural Philosophy.

X.—PRACTICAL MECHANICS.

55. The Application of the Principles of Mechanism to Simple Machines. The Steam Engine.

56. Text Books:—Lardner on the Steam Engine. Scott Russell on the Steam Engine. Nasmyth's Elements of Mechanism, with Remarks on Tools and Machinery. (*Weale*.) Goodeve's Elements of Mechanism. (*Longmans*.)

XI.—MAGNETISM, ELECTRICITY, AND HEAT.

57. Construction and Properties of Magnets; Magnetic Instruments; Terrestrial Magnetism; Diamagnetism.

58. Statical or Franklinic Electricity; Voltaic Electricity; Electro-dynamics; Electro-telegraphy; Electrometallurgy; Thermo-Electricity; Organic Electricity.

59. Conduction, Convection, and Radiation of Heat; Instruments for measuring Heat; Specific and Latent Heat; Reflection and Refraction of Heat; Diathermancy.

60. Text Books:—Golding Bird's Elements of Natural Philosophy, by C. Brooke. (*Churchill*.)

Lardner's Handbooks of Natural Philosophy. (*Walton and Maberly*.)

Herschel's Discourse on the Study of Natural Philosophy (*Longmans*) for a general view of the subjects.

XII.—ASTRONOMY.

61. The Principles of Plane Astronomy.

62. Text Books:—Herschel's Astronomy. (*Longmans*.) First chapters.

Airy's Lectures on Astronomy.

Maddy's Elements of Astronomy.

Practical Astronomy, (Orr's Circle of the Sciences.)

XIII.—CHEMISTRY.

63. Physical. Elementary laws of heat, light, and electricity, in connection with chemical action.

Inorganic. Chemistry of the metalloids and metals, laws of combining proportions, volumes of gases, vapours, &c.

Organic. Composition, properties, and decompositions of alcohols, acids, &c.

64. Candidates are expected to be able to explain decompositions by the use of symbols. Questions illustrative of general principles will be selected from the following, amongst other trades and manufactures: Metallurgy of Lead, Iron, and Copper; Bleaching, Dyeing, Soap-boiling, Tanning; the manufacture of Coal-Gas, Sulphuric Acid, &c.

65. Text Books:—Fownes' Manual of Elementary Chemistry. Miller's Elements of Chemistry.

XIV.—ANIMAL PHYSIOLOGY, IN RELATION TO HEALTH.

66. The general principles of Animal Physiology, and the application of them to the preservation of health and to the wants and emergencies of daily life.

67. Text Books:—Carpenter's Animal Physiology, 1859. (*Bohn*.)

Lardner's Animal Physics. (*Walton and Maberly*.)

Translation of Milne Edward's Manual of Zoology. (*Renshaw*.)

Marshall's Description of the Human Body, with Atlas (*Day and Sons*), for details of Anatomy.

XV.—BOTANY.

68. Sect. I. Vegetable Physiology. The general Structure of a Plant. The manner in which the organs perform their several functions; and the external agents which influence them. The nature of their principal tissues. The application of such facts to practical purposes.

69. Text Books:—Lindley's Theory and Practice of Horticulture (*Longmans*); or the same author's School-Botany, the edition of 1854, or any later one. (*Bradbury and Evans*.)

70. Sect. II. Practical Botany. The meaning of Botanical Terms. The general facts relating to Botanical Classification, excluding that of Linnæus. The Distinctions of some of the principal English Natural Orders of Plants not Cryptogamic. Naming Plants not Cryptogamic

at sight. The art of Describing Plants correctly. (For this living specimens will be provided.)

71. Text Books:—Lindley's School Botany, and Descriptive Botany. (*Bradbury and Evans.*)

72. Candidates will be expected to answer correctly six questions in Section I., and eight questions in Section II.; each Botanical description standing for one answer. The questions in both sections will have reference exclusively to subjects having some practical application. No one can pass who is not able to answer fairly the questions in Section II., proficiency in which will be rated higher than in Section I. Students are earnestly recommended to study diligently "Descriptive Botany," and the Physiological Aphorisms at the end of "School Botany;" and also to apply themselves diligently to the study of the wild or common hardy garden plants to which they may have access. A knowledge of Field Botany will rank much higher with the Examiner than Botany merely picked up in books.

XVI.—AGRICULTURE.

73. By eighteen or twenty questions on 1, The tillage of the soil; 2, The cultivation of crops; and 3, The management of live-stock; the Examiner will endeavour to ascertain the existence of such a knowledge of the theory and practice of Agriculture as must to some extent have been acquired in the field. A certificate will be easily obtained by any one able to direct the labour of the farm, who has also read any of the following standard Agricultural works:—

74. Morton's Cyclopædia of Agriculture. (*Blackie.*) Stephen's Book of the Farm. (*Blackwoods.*) Johnstone's Agricultural Chemistry. (*Blackwoods.*) Low's Elements of Practical Agriculture. (*Longmans.*)

XVII.—MINING AND METALLURGY.

75. Candidates should be able to identify with facility the ores of the more common metals, and be acquainted with their chemical compositions. They should also be familiar with the forms of occurrence of the various metallic ores, and the usual methods employed for their extraction and subsequent purification by crushing, stamping, and washing, &c. Underground surveying, principles of ventilation, particularly as applicable to collieries. A knowledge of furnace assaying, and a general acquaintance with the metallurgy of the more important metals.

76. First-class certificates can be given to those only who have either acquired some practical knowledge of mining, or who possess a special acquaintance with the metallurgy of at least one of the useful metals.

77. Text Books:—Dana's Mineralogy (*Trubner and Co., Paternoster-row.*) Mitchell's Assaying (*Baillière.*) Manual of Metallurgy (*Griffin.*) Useful Metals and their Alloys (*Houlston and Wright.*) Ure's Dictionary of Arts, Manufactures, and Mines (*Longmans.*)

XVIII.—POLITICAL AND SOCIAL ECONOMY.

78. Text Books:—Jones's Lectures on Political Economy, edited by Whewell. Principles of Political Economy, by John Stuart Mill.

The Phenomena of Industrial Life, edited by the Dean of Hereford. (*Groombridge.*)

Wheateley's Lectures on Political Economy. (*Parker.*)

79. Some knowledge of the Commercial, Financial, and Statistical History of the United Kingdom will be required, for which "Porter's Progress of the Nation," and "McCulloch's Commercial Dictionary," "Merivale's Lectures on Colonisation and the Colonies" (new edition) may be consulted.

N.B.—The Principles of Political Economy, by John Stuart Mill, need be studied only by those who aspire to a first-class Certificate.

XIX.—DOMESTIC ECONOMY.

80. By this is meant a knowledge of the management of household matters, and the principles on which they are

conducted; the "why and the wherefore" of everything under this head. For instance, as regards food, animal and vegetable, how differing in nutriment, &c., cookery, &c.

81. Clothing of various kinds, how best fitted for varying climates, seasons, and occupations, &c.

82. The Sanitary regulations of the house, such as ventilation, warming and lighting, drainage, &c. A knowledge of the weights and measures by which the prices of provisions, &c., are regulated; in fact, how to make the most of a small income.

83. A knowledge also of the principles of the Savings Bank, and of the accumulation of small savings, of the Benefit Society, of present and deferred annuities.

84. Text Books:—A Manual of Domestic Economy, by Tegetmeier. (*Home and Colonial School Society.*)

Household Economy, by Margaret Brewster. (*Constable and Co.*)

Domestic Economy, by Esther Copley. (*Groombridge and Son.*)

XX.—GEOGRAPHY.

85. All candidates will be expected to possess a sound knowledge of Elementary Geography, both physical and descriptive. Such knowledge will of necessity embrace an acquaintance with at least the outlines of the great natural features of the globe, the political divisions of countries, and the localities of towns and other places of importance. This kind of knowledge will be looked for in fuller extent with regard to the British Islands, and the various portions of the British Empire, than in respect of other countries. Among the tests applied to it, will be to make, from memory, a sketch, showing the chief features of any particular country in Europe named by the Examiner, and also to sketch a map of the county in which the candidate may be resident. It will not of course be expected that such sketches should possess accuracy of detail, but they should at least show the general direction of coast-lines, mountain-chains, or river-courses, with the localities and names of the principal towns. The map of any particular locality should embody the chief national features which the district may include (with the situation of coal-fields, if any), and should have marked upon it any localities which are distinguished as seats of manufacturing or commercial industry.

86. In addition to the above, candidates who aim at the highest class of certificate should be prepared to answer questions bearing upon Geography in its relation to the Physical Sciences and the History of Mankind—such questions, that is, as involve a general acquaintance with the subject of Climate, the laws of Meteorology, the Distribution of Plants and Animals over the Globe, the leading outlines of Geology, the Ethnographic Division of the Human race, and the commercial resources of different lands. This kind of knowledge is looked for, not in place of geographical knowledge of a more elementary kind, but as supplementary to the latter, and throughout based upon it.

87. Text Books:—

Manual of Geography, by William Hughes. (*Longmans.*)

Guyot's Earth and Man. (*Parker and Son.*)

Physical Geography, by Sir John F. W. Herschel. (*A. and C. Black.*)

Physical Geography of the Sea, by Maury. (*Philip & Son.*)

Page's Introductory Text Book of Geology. (*Blackwood.*)

The General Atlas (*published by the National Society.*)

The School Physical Atlas (*either Johnstone's or that published by the National Society.*)

XXI.—ENGLISH HISTORY.

88. A general knowledge of the outlines of English History. A special knowledge of English History during the reign of James II.

89. Text Books:—

Macaulay's History of England. Vols. I. and II. (*Longmans.*)

Creasy's Rise and Progress of the English Constitution. (*Bentley.*)
The Student's Hume. (*Murray.*)

XXII.—ENGLISH LITERATURE.

90. Any two, but not more than two, of the authors in the following list may be taken up for examination:—
Chaucer. Prologue to the Canterbury Tales.
Milton. Comus; Samson Agonistes; Lycidas; L'Allegro; Il Penseroso; Hymn on the Nativity.
Shakspeare. Hamlet; Henry V.; the Tempest.
Izaak Walton. Lives of Hooker, Herbert, and Sanderson.

Coleridge. Ancient Mariner; Christabel; Translation of Wallenstein.

91. Or one of the following works may be taken, with one of the above-mentioned authors:—

Trench. Lectures on the Study of Words.

Reed. Introduction to English Literature from Chaucer to Tennyson.

92. Candidates are recommended to make a very careful study of the text of the authors they may select. The questions on each author will be divided into two sections, the first intended to test the candidate's acquaintance with the text, the second his knowledge of the subject-matter and his critical and literary information. Full marks will not be given for answers in the second section, if those in the first section do not prove satisfactory.

XXIII.—LOGIC AND MENTAL SCIENCE.

93. Logic: Candidates will be expected to answer questions on the different processes of thought, and on the connexion of thought and language. Every Candidate must attempt to analyse examples of reasoning, and to detect fallacies.

94. Text Books:—Whateley's Elements of Logic, or Thomson's Outline of the Laws of Thought.

95. A Candidate for a second or third-class Certificate will be expected to prepare, in addition, any one of the following books which he may select:—Bacon's Novum Organum, Book I. (English Translation); Bishop Butler's Sermons; Paley's Moral Philosophy; Dugald Stewart's Philosophy of the Human Mind, Volume I.

96. A Candidate for a first-class Certificate will be expected to prepare any two of these works which he may select.

XXIV.—LATIN AND ROMAN HISTORY.

97. Livy, Book iv.

Virgil. Æneid, Book ix.

Roman History to the death of Augustus Cæsar.

98. Text Book:—Liddell's History of Rome (in one volume).

XXV.—FRENCH.

99. The Examination paper will be divided into three parts.

100. The first will comprise grammatical questions and an extract from a modern French writer to be translated into English. Candidates aiming at a 3rd class certificate should confine themselves to this first part.

101. The second part will comprise an English extract to be translated into French, and a list of idiomatic expressions to be rendered from French into English, or *vice versa*. This should be done satisfactorily by the candidate who aims at a second-class certificate.

102. In the third part, candidates for a 1st class certificate will have, in addition to a portion of the above, to answer properly (*in French*) some *elementary* questions on the three following subjects:

(1.) French literature in the first half of the 17th century (from Montaigne to Descartes).

(2.) French Weights and Measures, as compared with the English.

(3.) The History of France during the Administration of Cardinal Richelieu and that of Mazarin (1624-1661.)

103. Books recommended:—Nisard: Histoire de la Littérature Française. (*Williams and Norgate, London and Edinbro.*) Duruy: Histoire de France. (*Williams and Norgate.*)

XXVI.—GERMAN.

104. Schiller's Geschichte des Dreissigjährigen Krieges. Schiller's Die Piccolomini (Wallenstein).

Göthe's Egmont.

Kohlrausch's Deutsche Geschichte.

105. Pieces from each of the above works will be given for translation. Every candidate must translate one piece. First-class certificates will be given to those only who translate well from English into German, and write in German a good Essay relating to German history during the French Revolutionary Wars, the subject of which will be given to them when they come up for examination.

XXVII.—FREEHAND DRAWING.

106. In freehand drawing the Candidate will be required to show a practical knowledge of the principles usually applied to the imitation of natural and artificial forms, such as geometrical models, furniture, manufactured articles, foliage, and the human form.

XXVIII.—GEOMETRICAL DRAWING.

107. Practical Geometry, or Geometrical Drawing, required by the Mechanist, Engineer, Builder, and all in any way employed in the arts of construction. The Candidate will be examined in Practical Plane Geometry, right line figures of given areas, curve lines required in the arts, &c., in Practical Solid Geometry, Elementary Problems on the line and plane, and their combinations, the representation by orthographic projection of simple solids from conditions, and in the principles of Development as used in the construction of Maps, &c., and in Elementary Perspective Projection as far as it is required by the Architect.

108. Text-books:—Geometry, Plane, Solid, and Spherical (*Library of Useful Knowledge*) is especially recommended as a work to be studied on Theoretical Geometry. Practical Plane Geometry.—Elements of Geometrical Drawing, published for the Committee of Council on Education, 2 parts. (*Chapman and Hall.*)—Practical Geometry, Linear Perspective and Projection (*Library of Useful Knowledge*). For Descriptive Geometry.—Hall's Elements of Descriptive Geometry for Students in Engineering. Heather's Descriptive Geometry. Also the following French Works, which are mentioned in consequence of the great deficiency of English Works on Geometrical Drawing:—Éléments de Géométrie Descriptive, par S. F. Lacroix; Traité de Géométrie Descriptive, par Levebure de Fourcy; Nouveau Cours raisonné de Dessin Industriel, par Armengaud, aîné, et Armengaud, jeune, et Amoureux; Bardin's Works on Descriptive Geometry.

XXIX.—THEORY OF MUSIC.

109. Notation, the modern modes, intervals, time signatures, the stave, transposition, modulation, terms and characters in common use.

110. The Elements of Harmony.

111. Musical History and Biography.

112. Arrangements must be made, in the Previous Examination by the Local Boards, to test Candidates, by oral examination, in their knowledge or appreciation of the *sound* of musical successions and combinations. A form of the test to be used for this purpose by the Local Board at the Previous Examination will be sent by the Council to such Local Boards as may *apply for it*, in due time before the Examination.

P R I Z E S F O R 1 8 6 2 .

THE PRINCE CONSORT'S PRIZE.

113. His Royal Highness the President of the Society has been pleased to offer annually to the candidate who, obtaining a certificate of the first class in the current year, shall have obtained in that year and the three years immediately preceding it, the greatest number of such certificates, a Prize of TWENTY-FIVE GUINEAS. This Prize cannot be taken more than once by the same candidate. It will be accompanied by a certificate from the Society of Arts, setting forth the special character of the Prize, and the various certificates for which it was granted.

G E N E R A L P R I Z E S .

1. Arithmetic	{ First Prize, £5. Second Prize, £3.		
2. Book-keeping	{ First Prize, £5. Second Prize, £3.		
3. Algebra	{ First Prize, £5. Second Prize, £3.		
4. Geometry	{ First Prize, £5. Second Prize, £3.		
5. Mensuration.....	{ First Prize, £5. Second Prize, £3.		
6. Trigonometry	{ First Prize, £5. Second Prize, £3.		
7. Conic Sections.....	{ First Prize, £5. Second Prize, £3.		
8. Navigation and Nautical Astronomy...	{ First Prize, £5. Second Prize, £3.		
9. Principles of Mechanics	{ First Prize, £5. Second Prize, £3.		
10. Practical Mechanics.	{ First Prize, £5. Second Prize, £3. Additional* by Gift of The Rev. J. M. Frower:— Third Prize, £2, and Three Prizes of Books, value £1 each.	17. Mining and Metallurgy	{ First Prize, £5. Second Prize, £3. Additional by Gift of Sir Thomas Phillips, F.G.S.:— Third Prize, £2, and Three Prizes of Books, value £1 each.
11. Magnetism, Electricity, and Heat.....	{ First Prize, £5. Second Prize, £3.	18. Political and Social Economy.....	{ First Prize, £5. Second Prize, £3. Additional by Gift of the Very Rev. the Dean of Hereford:— Third Prize, £2 2s., and Three Prizes of Books, value £1 1s. each.
12. Astronomy	{ First Prize, £5. Second Prize, £3.	19. Domestic Economy...	{ First Prize, £5. Second Prize, £3. Additional by Gift of the Very Rev. the Dean of Hereford:— Third Prize, £2 2s., and One Prize of Books, value £1 1s.
13. Chemistry	{ First Prize, £5. Second Prize, £3.	20. Geography	{ First Prize, £5. Second Prize, £3.
14. Animal Physiology (in relation to Health).	{ First Prize, £5. Second Prize, £3. Additional by Gift of Harry Chester, Esq.:— Third Prize, £2, and Three Prizes of Books, value £1 each.	21. English History	{ First Prize, £5. Second Prize, £3. Additional by Gift of C. Wentworth Dilke, Esq.:— Third Prize, £2; and Three Prizes of Books, value £1 each.
15. Botany.....	{ First Prize, £5. Second Prize, £3. Additional by Gift of Dr. Lindley, F.R.S.:— Third Prize, £2, and Three Prizes of Books, value £1 each.	22. English Literature...	{ First Prize, £5. Second Prize, £3. Additional by Gift of C. Wentworth Dilke, Esq.:— Third Prize, £2; and Three Prizes of Books, value £1 each.
16. Agriculture	{ First Prize, £5. Second Prize, £3. Additional by Gift of J. C. Morton, Esq.:— Third Prize, £2, and Three Prizes of Books, value £1 each.	23. Logic and Mental Science	{ First Prize, £5. Second Prize, £3.
		24. Latin and Roman History	{ First Prize, £5. Second Prize, £3.
		25. French	{ First Prize, £5. Second Prize, £3.
		26. German	{ First Prize, £5. Second Prize, £3.
		27. Freehand Drawing...	{ First Prize, £5. Second Prize, £3.
		28. Mechanical Drawing.	{ First Prize, £5. Second Prize, £3.
		29. Theory of Music.....	{ First Prize, £5. Second Prize, £3.

* Should any further "Additional" Prizes be offered, notice of them will be given in the *Journal*.

GOVERNMENT APPOINTMENTS.

114. Nominations to compete for appointments in the Civil Service have been from time to time placed at the disposal of the Council, by members of her Majesty's Government, and these have been presented to Candidates who distinguished themselves at the Society's Examinations. The following is a List of the candidates who have thus obtained appointments:—

Charles Chambers, Leeds Mechanics' Institution—Inland Revenue.
 Robert Abbott, Leeds Mechanics' Institution—Privy Council Office.
 William Matthew Taylor, Windsor and Eton Literary and Scientific Institution—Privy Council Office.
 Edward Highton, Leicester Mechanics' Institution—Privy Council Office.
 Edward Philip Plowman, Bury St. Edmund's Commercial School—Privy Council Office.
 Thomas Ross Howard, Crosby Hall Evening Classes—Customs.
 George Edward Skinner, Lymington Literary Institution—Customs.
 George Harrison, Leeds Young Men's Christian Institute—Supernumerary Surveyorship of Taxes.
 George Best, Leeds Mechanics' Institution—Supernumerary Surveyorship of Taxes.
 George William Wicker, Portsea Watt Institute—Privy Council Office.
 John Palethorp, Glasgow Mechanics Institution—Privy Council Office.
 Archibald S. Lang Macdonald, Glasgow Mechanics' Institution—Privy Council Office.

LOCAL EDUCATIONAL BOARDS.

The following is a List of the places at which Boards have already been formed, with the names of the Secretaries, from whom intending Candidates may obtain information relative to the Examinations:—

LOCAL BOARDS.	SECRETARIES.
Aberdeen.....	Mr. James Sinclair, Mechanics' Institution, Aberdeen.
Aldershot District	Mr. Barrow Rule, M.C.P., Principal of the Classical and Mathematical School, Aldershot.
Andover	Rev. H. M. White, Andover.
Ashbourne	Mr. C. J. Welsh, Ashbourne.
Ashford	Mr. F. Garaway, Schoolmaster, Ashford New Town.
Bacup	Dr. J. H. Warrall, Bacup.
Banbury	Mr. John H. Beale, Banbury.
Barnet	Mr. John Thimbleby, Barnet.
Battersea.....	Mr. T. E. Hardy, Bridge-road west, and Lammas-hall, Battersea, S.W.
Belfast	Rev. William Julius McCullagh, Ballysillan, Belfast.
Berkhampstead	Mr. J. R. Crawford, M.A., Master of Grammar School.
Birmingham and Midland Institute	Mr. John Jaffray, Newspaper Proprietor, New-street, Birmingham.
Bishop's Stortford	Mr. F. Woodham Nash, B.A., Lion House, Birchanger, Bishop's Stortford.
Blackburn	Mr. Robert C. Radcliffe, Solicitor, Blackburn.
Blandford	Mr. James B. Green, Architect and Surveyor, Salisbury-street, Blandford.
Bradford	Mr. M. H. Walls, 66, Victoria-street, Bradford.

LOCAL BOARDS.

SECRETARIES.

Brighton (for Sussex)...	Mr. Barclay Phillips, 75, Lansdowne-place, Brighton.
Bristol	Mr. J. F. R. Daniel, Athenæum, 'Bristol.
Brompton (near Chatham)	Mr. J. Greenleaf, St. Mary's-vale, Brompton, Chatham.
Bucks and Berks Adult Education Society, Windsor	Rev. Thomas Rooke, M.A., St. Alban-street, Windsor.
Bury	Mr. Edward Bunting, Athenæum, Bury.
Canterbury	Rev. Edward Gilder, M.A., Canterbury.
Carlisle, Young Men's Christian Association.	Mr. John Eccleston.
Carlisle, Church of England Association, ...	Mr. Thos. Harris, Stationer, 51, Castle-street, Carlisle.
Carlisle, Mechanics' Institute	Mr. W. A. Williamson, Mechanics' Institute, Carlisle.
Carshalton	Mr. Wm. Morley, jun., North-street, Carshalton.
Chelmsford	Mr. Edwin Adams, M.R.C.P., Guildford-terrace, Chelmsford.
Croydon	Mr. Francis Warren, Bookseller, 131, High-street.
Darlington	Mr. Geo. S. Gibbs, Mount Pleasant, Darlington.
Deptford	Mr. Thomas Garland, 2, Wellington-grove, Greenwich-road, S.E.
Derby	Mr. H. M. Holmes, Hon. Local Sec. to the Society of Arts, London-road, Derby.
Devonport	Mr. William Mogg and Mr. Samuel Chapple, Mechanics' Institute, Devonport.
Glasgow, Athenæum...	Mr. Moses Provan, Accountant, 110, West George-street, Glasgow.
Glasgow Institution ...	Mr. John Craig, F.E.I.S., Glasgow Institution, 37, Cathedral-street, Glasgow.
Glasgow, Mechanics' Institution	Mr. James Inglis, 5, Buchanan-street, Glasgow.
Glasgow, Popular Evening Classes, Andersonian University ...	Mr. Robert B. Smith, Teacher of English and Classics, Andersonian University.
Halifax, Mechanics' Institution	Mr. A. C. Foster, Wentworth-cottage, Halifax.
Halifax, Working Men's College	Mr. Geo. Gibb, 20, Corporation-street, Halifax.
Hartlepool (West)	Mr. Thomas Preston Brunton, Solicitor, West Hartlepool.
Hertford	Mr. John Marchant, jun., Port-vale, Hertford.
Hitchin ...	Mr. Joseph Pollard, Highdown, near Hitchin.
Holmfirth	Mr. J. Batley, South-lane, Holmfirth.
Ingrow - cum - Hainworth	Mr. Jackson, Ingrow-cum-Hainworth.
Ipswich	Mr. Herbert Wright, 44, Handford-road, Ipswich.
East Lancashire Union of Mechanics' Institutes, Burnley	Mr. John Sutherland, Post-office, Burnley.
Leeds Yorkshire Union	Mr. Barnett Blake, Agent of the Yorkshire Union of Mechanics' Institutes.
Leeds Young Men's Christian Association	Mr. John Pickering, Secretary of the Leeds Mechanics' Institution.
	Mr. Mark Scott, 9, East-parade, Leeds.

LOCAL BOARDS.	SECRETARIES.
Leicester	Rev. J. O. Picton, Leicester.
Liverpool	Rev. A. Hume, D.C.L., and LL.D., 24, Clarence-street, Everton.
Lockwood	Mr. Alfred Lee, Mechanics' Institution, Lockwood.
London Domestic Mission Reading-room ...	Mr. T. C. Clarke, Beresford-terrace, Highbury New-park, N.
„ Mechanics' Institution	Mr. T. A. Reed, 41, Chancery-lane, W.C.
„ Polytechnic Institution (Limited) ...	Mr. E. V. Gardner, Professor of Chemistry, Polytechnic Institution, W.
„ Metropolitan Evening Classes, Sussex Hall	Mr. H. W. Hansen, Sussex Hall, Leadenhall-street, E.C.
„ St. Stephen's, Westminster	Mr. Samuel Elliott, Emery Hill's School, Rochester-row, Westminster, S.W.
„ St. Thomas, Charterhouse Evening Classes	Rev. R. Holme, 7, Charterhouse-square, E.C.
„ Clerkenwell Institute	Mr. Chas. Binyon, Clerkenwell Institute, St. James's-walk, Clerkenwell-green, E.C.
Louth	Mr. Benjamin Crow, Mechanics' Institution, Louth.
Lynn (King's)	Mr. T. Burton, 23, South Everard-street, Lynn.
Macclesfield	Mr. D. B. Curwen, Park-lane, Macclesfield.
Manchester	Mr. Thomas Marshall, Manchester Mechanics' Institution.
Middlesbro'	Mr. William Taylor, Mechanics' Institute, Middlesbro'.
Newbury	Mr. T. Gurney, Newbury.
Newcastle - on - Tyne Church of England Institute	Mr. Joseph Forster, Church of England Institute, Newcastle-on-Tyne.
Newcastle - on - Tyne Mechanics' Institution	Mr. Adam Carse, 18, Mosley-street, Newcastle.
Nottingham	Dr. W. Tindal Robertson, Nottingham.
Oldham	Rev. John Hodgson, Queen-street, Oldham.
Paisley	Dr. W. B. Mc Kinlay, Paisley.
Pembroke Dock	Mr. Augustus Wiele, H.M. Dockyard, Pembroke Dock.
Peterborough	Mr. C. T. Cotton, Long-causeway, Peterborough.
Portsea (Watt Institute)	Mr. Andrew Murray, C.E. Royal Dockyard.
Richmond	Rev. W. Bashall, A.M., 3, Cambridge-villas, Richmond-hill, S.W.
Rotherham	Mr. Frederick Edwards, Solicitor, Rotherham.
„	Mr. M. H. Habershon, Holmes, near Rotherham.
Salford	Mr. William Noar, Borough Treasurer, Town Hall, Salford.
Scarborough	Mr. William Barry and Mr. Thomas Shields, Town Hall, Scarborough.
Selby	Mr. William Allison, Bank Manager, Selby.
Sheerness	Mr. H. Morgan, 6, Montague-terrace, Sheerness.
Sheffield	Mr. T. Rowbotham, People's College, Sheffield.
Skipton	Mr. George Kendall, Skipton.

LOCAL BOARDS.	SECRETARIES.
Southern Counties' Adult Education Society	Rev. R. Fitzgerald, Winslade, Basingstoke.
South Staffordshire Union of Educational Institutes	Mr. Fred. Talbot, Messrs. Chance's Schools, Smethwick, Birmingham.
Wakefield	Mr. Wm. Williamson, Ch. Clerk, Probate Court, Wakefield.
Warminster	Mr. Frank Morgan, Warminster.
Waterford	Mr. James Budd, Thomas-street, Waterford.
Wigan	Rev. T. F. Fergie, Pemberton-villa, Wigan.
Wirksworth	Mr. William Tomlinson, Mechanics' Institute, Wirksworth.
Worcestershire, Union of Educational Institutes	Rev. W. Walters, Hanley-grange, Upton-on-Severn; Mr. James Tree, Solicitor, Worcester.
Wilton	Rev. R. S. C. Chermiside, Wilton.
York	Mr. Charles Cumberland, Institute of Popular Science, York.

APPENDIX.

This Appendix, which is attached to the separate copies of the Programme printed for distribution,* contains the forms that will be forwarded at the proper time to the Local Boards, but as these do not differ materially from those of last year, they are not here reprinted in the *Journal*. The Appendix also contains the List of Prizes and Certificates Awarded, and the Tables of the results of last year's Examinations, with the remarks of the Examiners. These have already appeared in the *Journal*, pages 508, 525, 560, 639.

The preceding pages relate to the Previous and Final Examinations of the Society of Arts. What follows relates to the Elementary Examinations which are held by Unions, Local Boards, and Institutions connected with the Society of Arts, and which are intended to prepare children and others for, and to lead them up to, the Examinations of the Society.

CENTRAL COMMITTEE FOR ELEMENTARY EXAMINATIONS HELD BY PROVINCIAL AND DISTRICT UNIONS OF INSTITUTIONS, ADULT EDUCATION SOCIETIES, LOCAL BOARDS, &C., IN CONNECTION WITH THE SOCIETY OF ARTS.

MEMBERS OF THE COMMITTEE.

Edwin Adams, Esq., M.R.C.P., Chelmsford Local Educational Board.
 The Rev. Thomas Bacon, { Honorary Secretaries of the
 The Hon. and Rev. S. Best, { Southern Counties Adult Education Society.
 Barnett Blake, Esq., Agent of the Yorkshire Union of Mechanics' Institutes.
 Harry Chester, Esq., Vice-President of the Society of Arts.
 The Rev. Samuel Clark, Chairman of the Central Board of Examiners of the Society of Arts.
 The Rev. C. D. Goldie, Member of the Committee of the Bucks and Berks Adult Education Society.
 The Hon. and Rev. Godolphin Hastings, M.A., Vice Chairman of the Hertford Local Educational Board.

* Copies may be had gratis on application to the Secretary of the Society of Arts.

The Rev. David Melville, }
 Member of the Council } of the Worcestershire Union
 John Slaney Pakington, } of Educational Institutions.
 Esq., President
 H. E. Montgomery, Esq., Deptford Local Educational Board.
 Wm. Newmarch, Esq., Notting-hill Working Men's Association.
 Sir Thomas Phillips, F.G.S., Chairman of the Council
 Samuel Redgrave, Esq., Treasurer } of the Society of Arts.
 Wm. Spottiswoode, Esq., F.R.S., Member of the Council
 Barrow Rule, Esq., M.R.C.P., Aldershot District Local Educational Board.
 F. Talbot, Esq., Secretary of the South Staffordshire Union of Educational Institutions.

I. The Central Committee consists of two representatives of each Provincial and District Union and Adult Education Society, four members of the Council of the Society of Arts, the Chairman of the Society's Central Board of Examiners, and six representatives of Local Educational Boards.

II. The object of the Central Committee is to promote uniformity of action, and a fixed standard, in the Elementary Examinations held by the various bodies in connexion with the Society of Arts.

III. The Central Committee provides for common use a Scheme of Two Elementary Examinations, consisting of two sets of papers, one suited for Junior, the other for Senior Candidates, with corresponding Forms of Certificate, to be awarded by the local authority under which the examination has been conducted.

IV. The Certificate of a Senior Candidate, of sixteen years of age, will be received, without any further "Previous Examination," as a "pass" to the Final Examinations of the Society of Arts, if accompanied by a Certificate from the Local Board or Union, that the Candidate is fit to be examined in the special subject or subjects in the Society of Arts Programme in which he or she proposes to be examined.

V. The Society of Arts prints and distributes, at cost price, the Examination Papers, Certificates, and Circulars, and provides for the correspondence, of the Central Committee.

VI. The Elementary Examinations are not intended to be in any degree competitive. They are open to persons of either sex or of any age.

VII. To prevent the possibility of unfair advantages being taken from a premature knowledge of the Examination papers, the Examinations must be simultaneous everywhere.

VIII. In 1862, they will be held on Tuesday the 11th, Wednesday the 12th, Thursday the 13th, and Friday the 14th of March, after 4 o'clock p.m.

IX. In any case in which a Local Examining Body may examine Candidates in the doctrines of Holy Scripture, in the Prayer Book, or in any other Religious Formulary, the results of such Examination may be stated, by that Local Examining Body, on the Certificate; though the Central Committee, representing a variety of opinions, does not itself provide for Examinations in religious doctrine.

X. The Secretary of each Union, Society, or Board, which desires to use the Examination papers of the Central Committee, must apply for the requisite forms, on or before the 10th February, 1862, to "The Secretary, Central Committee for Elementary Examinations, Society of Arts, John-street, Adelphi, London, W.C."

SCHEME OF THE EXAMINATIONS FOR 1862.

JUNIOR CANDIDATES.

1. Every Candidate must be examined in the first four Rules of Arithmetic, simple and compound.

2. Male Candidates must also be examined in two, and Females in one, of the three following subjects:—

- A. A General Knowledge of the Gospel History.
- B. The Rudiments of English History.
- C. The Rudiments of the Geography of England.

3. Female Candidates must also be examined in plain needle-work.

4. Fair writing and spelling, with good reading of a simple narrative, will be required of every Candidate.

5. A satisfactory Examination will entitle the Candidate to a Certificate.

SENIOR CANDIDATES.

1. Every Candidate must be examined in Arithmetic, including the Rule of Three, Decimal and Vulgar Fractions.

2. Every Male Candidate must be examined in the Geography of the British Isles, and English History from the death of Queen Anne to the accession of Victoria, with the Rudiments of the History from the Conquest.

3. Every Female Candidate must be examined in needle-work.

4. Any Candidate may also be examined in the facts of St. Matthew's Gospel and of the Acts of the Apostles; and the results will be stated on the Certificate.

5. Every Candidate will be required to exhibit, in his or her papers, fairly good handwriting, spelling, and knowledge of grammar.

6. A satisfactory Examination will entitle the Candidate to a Certificate.

INTERNATIONAL EXHIBITION OF 1862.—CATALOGUES.

1. Her Majesty's Commissioners intend to issue three Catalogues; two relating to the Industrial Sections of the Exhibition, and one to the Fine Arts Section. Advertisements as well from exhibitors as from the general public will be received for all three Catalogues.

2. The Catalogues which have reference to the Industrial Sections will be called respectively "The Industrial Catalogue," and "The Illustrated Catalogue;" the third will be "The Fine Arts Catalogue."

3. All matter which is intended for insertion in the body of the Catalogues must be sent in to the Secretary of her Majesty's Commissioners, F. R. Sandford, Esq., 454, West Strand, before the 1st of February, 1862, after which date no alterations or fresh insertions can be guaranteed. Advertisements will be admitted if received before the 1st of March; the rate of charge will be doubled between the 1st of March and the 1st of April, after which day no further advertisements will be received for the first editions. The insertion of all advertisements is subject to the approval of her Majesty's Commissioners. All communications relating to the Catalogues should be addressed to the Secretary, and be legibly endorsed on the outside of the envelope, "Catalogues."

SHILLING CATALOGUES.

4. "The Industrial Catalogue" will be a list containing the name and address of each exhibitor, and a very brief description of his goods. It will be in one volume, demy 8vo., will be sold for one shilling (in the Exhibition Building), and will be produced wholly at the cost of her Majesty's Commissioners.

5. "The Fine Arts Catalogue" will be the same as the Industrial Catalogue in size of page, print, and price, and will also be produced at the cost of her Majesty's Commissioners.

6. "Advertisements" will be inserted in double columns, printed in ruby type, in both these Catalogues, of each of which her Majesty's Commissioners guarantee an issue of 250,000 copies. The charges for the issue will be as follows:—

	£	s.	d.
Ten lines or under in one column	5	0	0
For every other line	0	10	0 per line.
For a half-page	30	0	0
For a whole page	50	0	0

Advertisements on the wrapper will be charged by special contract.

THE ILLUSTRATED CATALOGUE.

7. "The Illustrated Catalogue" will be an extended form of the (shilling) Industrial Catalogue, containing in addition matter which especially affects the interests of the exhibitors. It will be printed in super-royal 8vo., so that it may range with the Catalogues of 1851 and 1855, and will be published in parts. In order that an idea may be formed of its capabilities and advantages a specimen sheet has been printed.

8. The name, address, and business of every exhibitor will be printed in large type (small pica), with a brief general description of the objects exhibited by each. The printing and paper of this portion will be provided at the cost of her Majesty's Commissioners.

9. One or more classes will form a part, and each part will be sold for one shilling (in the building). Editions of 10,000 of each part will be printed off from time to time.

10. The exhibitors may insert any minute descriptions of the articles they exhibit, with prices or otherwise as they may think fit; also a notice if they have obtained medals at previous Exhibitions. The following will be the tariff of charges:—

For ten lines or under of small type (brevier), in one column, 10s.

For every other line 1s. A whole page £5.

The space occupied by woodcuts will be charged at the same rate.

11. Exhibitors who wish to illustrate their descriptions must provide their own woodcuts or engravings, which will be inserted on the conditions that they do not extend beyond the prescribed margins, and are first approved by the Commissioners.

12. "Advertisements" will be inserted in double columns in each part of the Catalogue, of which it is guaranteed that 10,000 copies shall be issued. The charge for insertion in such an edition of each part will be as follows:—

Five lines or under, in a single column, 10s.; and for every succeeding line 1s. 6d.

A half-page, £5.

Whole page, £10.

Advertisements on the wrappers will be charged by special agreement.

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[From Gazette, August 16th, 1861.]

Dated 14th June, 1861.

1527. W. C. Thomas, 6, Wells-street, Oxford-street—Imp. in metal casing or armour for the defence of ships and batteries.

Dated 18th June, 1861.

1565. W. E. Newton, 66, Chancery lane—Improved apparatus for transmitting motion. (A com.)

Dated 27th June, 1861.

1643. W. McNaught, Manchester—An improved method of supporting diagonal, condensing, and other steam engines.

1647. J. Doughy, Craven-buildings, Drury-lane—An improved apparatus for obtaining and applying motive power.

Dated 28th June, 1861.

1659. J. B. Hawkins, North-street, Limehouse—Imp. in the construction of cocks for drawing off liquids and vapours, and for regulating the flow or passage thereof.

Dated 1st July, 1861.

1671. J. H. Johnson, 47, Lincoln's-inn-fields—Imp. in apparatus for manufacturing and bottling aerated liquids. (A com.)

1673. J. Shepherd and W. Goodfellow, Manchester—Imp. in apparatus for carrying off the scum in the water in steam boilers.

Dated 6th July, 1861.

1719. J. E. Reid, 20, Fleming-road, Newington—A safety window sash fastener and draught excluder.

Dated 12th July, 1861.

1757. W. B. Adams, Holly-mount, Hampstead—Imp. in locomotive engines and trains.

Dated 18th July, 1861.

1811. J. H. Johnson, 47, Lincoln's-inn-fields—Imp. in capstans and windlasses. (A com.)

Dated 19th July, 1861.

1817. R. Mushet, Coleford, Gloucestershire—Imp. in the manufacture of cast steel.

1825. J. H. Johnson, 47, Lincoln's-inn-fields—Imp. in the manufacture of ships' armour plates and other heavy forgings, and in the machinery or apparatus employed therein. (A com.)

Dated 23rd July, 1861.

1842. C. Batty, 196, Marylebone-road—Imp. in the means of preventing the extension of fire in buildings.

Dated 25th July, 1861.

1865. B. Brown, and R. Hacking, Bury—Certain imp. in machinery or apparatus employed in spinning cotton, wool, silk, and other fibrous substances.

1867. D. Spink, Eastbourne, Sussex—Imp. in steam engines.

1869. E. Haefely, Kearsley, Lancashire—Imp. in extracting copper from its ores.

1871. C. Robertson, Edinburgh—Imp. in sights for fire arms.

Dated 26th July, 1861.

1877. W. Wigfall, Sheffield—Imp. in the manufacture of brushes and brooms.

Dated 27th July, 1861.

1881. J. B. Herbert, 8, Newman-street—Imp. in fire guards.

1883. E. P. Colquhoun and J. R. Thomson, 1, Laurence Pountney-hill—Imp. in fire-bars for furnace grates.

Dated 29th July, 1861.

1891. W. Melrose, 25, Kingsbridge-place, Millwall—Imp. in the construction of railway wheels.

1893. W. L. Scott, Bayswater—Imp. in preparing red, purple, and certain other dyes.

Dated 30th July, 1861.

1897. T. Bradford, Manchester—Imp. in washing, churning, wringing, and mangling machines.

1899. T. S. Cressey, Burton-on-Trent—Imp. in machinery used in the manufacture of casks.

Dated 31st July, 1861.

1905. A. Wood, Lewes—Imp. in refrigerating storehouses and in other structures in which a low temperature is continually or periodically required.

PATENTS SEALED.

[From Gazette, August 16th, 1861.]

397. R. Offord, Jun.	457. C. Stevens.
398. F. Schaf r.	458. C. Stevens.
401. C. Price and E. Price.	467. J. M. Dunlop.
405. J. H. Brierley.	472. J. Hinks.
415. M. Henry.	486. J. Young.
417. E. Wilkins.	500. W. Whalley.
418. C. Smith.	504. C. Stevens.
419. J. Vavasour.	519. R. Thompson.
420. T. Holstead.	531. J. Ellis, J. Stringer, and J. Bradock.
422. G. Parsons.	552. W. E. Newton.
423. W. Halse.	615. A. Peek.
424. T. Richardson.	626. J. C. Coombe & J. Wright.
426. F. D. Blyth and J. Adair.	680. W. E. Newton.
435. D. Evans.	714. T. Greenwood & A. Kinder.
439. B. Lang.	794. O. Earle.
443. H. G. Prossor.	795. R. Ridley and J. Rothery.
445. H. Hatchwell and S. B. Hatchwell.	862. H. W. Blake.
446. E. T. Truman.	989. A. V. Newton.
447. M. L. J. Lavater.	1153. J. Willis.
448. A. Horwood.	1256. B. Hudson.
450. W. Walker.	1286. H. N. Penrice.
454. J. E. Cook.	30. A. F. Johnson.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

[From Gazette, August 16th, 1861.]

August 12th.	August 14th.
1851. T. Worth and H. Spencer.	1924. J. Macintosh.
August 13th.	
1845. W. F. Norcliffe.	

[From Gazette, August 20th, 1861.]

August 15th.	2153. R. Romaine.
1875. J. Norton.	August 17th.
1887. W. F. Padwick.	1893. F. Preston & W. McGregor.

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

[From Gazette, August 16th, 1861.]

August 12th.	1777. J. Norton.
1771. W. Todd and J. Todd.	
1787. W. Kennard.	August 9th.
August 14th.	1760. J. Gibson.
1776. B. O. Stratford.	

[From Gazette, August 20th, 1861.]

August 15th.	August 16th.
1788. W. Burgess.	1847. W. E. Newton.